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AUTHOR Wasem, Jim
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ABSTRACT

"Pickleball" is a new racquet sport which is one of the fastest growing educational activities in the Northwest. This paper describes the development of a test battery designed to measure students' pickleball skills for purposes of classification; to determine improvement of playing skills; and to aid in grading of individual performance. Skills such as serving, smash or kill shots, drive shots, drop or "dink" shots, long high clears or deep "lob" shots, as well as individual quickness and agility were deemed to be vital components of an accomplished pickleball player. The "Comprehensive Pickleball Skill Test" was constructed to meet the needs of Eastern Washington University teacher education students, the physical education department, and individual pickleball instructors. Scores were derived from tests administered to 44 physical education majors after 4 weeks of intensive fundamental training in the basic skills of pickleball; 1 week later, the test was again administered in an attempt to determine test reliability. The test was validated by correlating test scores of all subjects with the ratings of a group of four experienced pickleball instructors. A description of how each of seven test items was administered (including diagrams depicting score values) and recommendations for future research complete the document. (LL)

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ED 362 468

A COMPREHENSIVE PICKLEBALL SKILLS TEST

by
DR. JIM WASEM
EASTERN WASHINGTON UNIVERSITY

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In 1965, on Bainbridge Island, Washington, United States Senator Joel Pritchard and two of his associates invented the exciting new racquet sport game of "Pickleball." This fast paced new net court game features two to four players, a perforated plastic ball, a wooden paddle for each participant, and is played over a three foot high net on a 20 X 44 foot standard doubles badminton court. Tennis courts can also be adapted to serve as Pickleball courts by adding a seven foot wide "NON VOLLEY" zone parallel to the net, using the outer dimensions of the standard tennis service zone areas as the boundaries.

The unusual name of the activity developed from the habit of the Pritchard's small pet spaniel "Pickles" continually interrupting the games on the family driveway by retreiving his plastic ball that the family originally used for the activity. Hence "Pickle's Ball" evolved into the present name of "Pickleball."

Pickleball is recognized as the fastest growing educational activity in the Northwest. It is rapidly gaining acceptance in physical education curriculi at Junior and Senior High Schools throughout the nation, and is acknowledged as an excellent coeducational activity. The game involves quickness, agility, coordination, strategy and control and, due to the relativly slow speed of the ball, is a great ability equalizer. It also serves as an excellent cardiovascular and muscular conditioner.

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We have utilized the game of pickleball in our Physical Education curriculum for the general student population here at Eastern Washington University for the past ten years, where it has met with enthusiastic acceptance by student and instructor alike. We have also incorporated the activity into our "Professional Laboratory Experience" for our Physical Education Majors and Minors in our "Racquet Sports Battery." We utilize Pickleball as an excellent "lead up" introductory activity to Badminton, Racquetball, and Tennis. This inclusion into our University Program led the author to search for a valid, objective, comprehensive, reliable skill test battery designed to measure general ability in pickleball for classification purposes; to determine improvement of playing skill; and to aid in grading individual performances. Due to the comparative newness of the game, there were no adequate standardized skill tests to be found. This necessitated the scientific construction of an appropriate skills test.

The first step in construction of this test battery was to make a critical examination of the skills deemed necessary for successful performance in playing the sport or activity. Skills such as serving, smash or kill shots, drive shots, drop or "dink" shots, long high clears or deep "lob" shots, as well as individual quickness and agility were deemed by the author to be the vital components of an accomplished pickleball players repertoire and were included as the basic items in the test.

The following test was constructed in an attempt to meet the needs of students, the Physical Education Department and the individual Pickleball instructors of Eastern Washington University. Hopefully, the test may have universal application. The "Comprehensive Pickleball Skill Test" consists of the following seven items:

1. A service test (from EACH service court) designed to test service accuracy and velocity.
2. A "LOB" or "HIGH CLEAR" test, designed to determine ability to clear or lob a shot to the opponents deep backcourt.
3. A six foot distant wall volley for testing racquet CONTROL, and "DROP SHOT" mastery.
4. A midcourt "DROP AND DRIVE" test to determine power and accuracy of *BOTH* forehand and backhand DRIVE shots. (Could be considered as two basic tests.)
5. A 20 foot distant wall volley, testing "POWER" and "GROUND STROKE" excellence.
6. A "KILL" or "SMASH" test designed to measure the ability of the player to use the SMASH stroke effectively.
7. A "quickness" or "agility" test developed to determine the foot speed and foot quickness of individual students.

PROCEDURE:

Scores were obtained from forty four coeducational Physical Education majors who participated in a "Pickleball" section of a "Racquet Sports Professional Laboratory" experience at Eastern Washington University. After four weeks of intensive fundamental training on the basic skills of pickleball, each subject was administered the test battery of seven pickleball skill items. One week later, the test was again administered in an attempt to determine test reliability. This "Test-Retest" Method of determining reliability yielded a reliability coefficient of .92 $\pm$ .005. The test was validated by correlating the test scores of all the subjects with the ratings of a group of four experienced Pickleball instructors. The player scores on each individual test item were totaled,

tabulated, and ranked, and then were compared to this rating scale by the panel of experts. The correlation of the group with the combined judges rating was .87 ± .047. A second validation score was obtained when the standings of two round robin tournaments were compared to the results generated by the test battery. A coefficient of .82 was obtained in this criterion related second validation process.

ADMINISTRATION OF THE TEST:

1. **SERVICE TEST**: A court with special markings is first prepared. The receiver's service court is divided into three equal segments from front to back to serve as a scoring zone. Score values are then chalked in each of the rectangles, or inked on a 8 x 11 piece of typewriting paper and taped on the respective scoring areas (see fig. 1). A regulation pickleball net is stretched across the court at regulation height while another net (or a rope) is stretched parallel with the lower net creating a five foot high, twenty foot wide, service "window". This narrow opening necessitates the server generating a long, low, powerful, serve.

The subject stands behind the base line and is given ten service attempts to place the ball into the highest scoring target zones across the net. Any legal underhanded service is permitted. Any "let" service is served again.

The score of each serve is the point value of the spot on which the served ball lands. Any ball landing on the line, scores the point value of the higher target area. Ten services in each right and left hand service court are given, and the sum of the scores of the serves is determined, and an average service score is recorded.

2. **"LOB" OR "HIGH CLEAR"** Test: A specially marked court is again prepared. Scoring zones are constructed and point values are chalked or marked in three equal (2 x 10 foot) rectangles in the back six feet of the receiving court (see fig 2). A regulation pickleball net is suspended across the court eight feet high, located at the **back edge of the nonvolley zone.** The subject stands in the middle of the backcourt area within six (6) feet of the baseline. The teacher, or teacher's aide, stands across the net in the middle of the non volley zone, and throws pickleballs on one hop to the subject. (The velocity of the throws should approximate an average drive shot's speed, or a rule of thumb might be to make a firm, 1/2 speed delivery.) Twenty (20) throws are given to each subject (ten forehands and 10 backhands). The player attempts to lob or clear these throws over the high net in such a manner that the ball drops into the back of the the target area into the highest scoring zones. The sum of the scores of all the shots is tabulated and the average score is recorded.

3. **THIRTY SECOND WALL VOLLEY (Control Test..Drop Shots)**

The subject stands behind a line drawn or taped six feet away from a smooth, blank wall. A line simulating the net is drawn on the wall, at a height of three feet, parallel with the floor. On the command of "GO", the subject volleys the ball against the wall above the "net" as many times as possible during a thirty second time period, using an alternating forehand and backhand **UNDERHAND** volley. The subject stops on command after 30 seconds have elapsed. A point is recorded each time the ball contacts the wall above the three foot "net" during this time span. The subject must remain behind the "starting or restraining line" at all times. If the player touches, or goes over the line with any part of his body, that particular

point is not counted. If the ball does not rebound to the subject, he/she may enter the zone to retrieve the ball, retreats behind the starting line, serves the ball to the wall, and continues the test. If the ball bounces away from the subject, or if the ball is missed, the judge may toss another ball to the player and the test may continue. Three trials *may* be given, with the average (or best) score recorded.

4. **DROP and DRIVE** test: This test determines the POWER and ACCURACY of a players forehand and backhand "DRIVE" stroke.

The receiver's court behind the non-volley zone is divided into three equal rectangles perpendicular to the net, stretching parallel to the sidelines. The middle rectangle is designated as a non scoring zone (a poor shot placement) while each of the outside two rectangles are segmented to include three target scoring zones (six total scoring areas) (see fig. 3). The degree of difficulty of a return is increased the farther back on the court the drive shot is placed, thus a greater reward is given for the longer shot placement. Also, the longer the shot, the more force required.

The subject stands at the midline between the two service courts, halfway between the non volley zone and the end line. He/she bounces the ball, and attempts to execute a flat drive shot placed deep down either sideline. The subject must **alternately** attempt forehand and backhand drive shots using this "Drop and Drive" format. The player is given twenty attempts (ten forehands, ten backhands). The score of each drive shot is the point value of the spot on which the driven ball lands. The sum of the scores for each shot is tabulated, and the average score is recorded for the forehand and the backhand drive.

5. A TWENTY FOOT, 30 SECOND, WALL VOLLEY (Power Test): This test is simply a wall volleying measure, the score of which is used to determine overall pickleball playing ability.

The subject stands behind a line marked or taped on the floor twenty feet away from a smooth, blank wall. A line simulating the "net" is drawn twenty feet long, at a height of three feet up on the wall. On the command of "Go", the subject volleys the ball as rapidly as possible against the wall above the net, for thirty seconds. The ball must rebound far enough from the wall so that the subject remains behind the volley line prior to and during each shot. If any part of the player's body touches or goes over the line, that particular point is not counted. If the ball does not rebound to the player, he/she may cross the line, retrieve the ball, retreat behind the line and continue the test. If the ball eludes the subject, the judge may toss another substitute ball to the player and the test continues.

A point is recorded each time the ball strikes the front wall, and the total points accumulated at the end of thirty seconds constitute the students score. (Three trials may be given with either a best, or an average score recorded.)

6. KILL OR SMASH TEST: This test is designed to determine the ability of the player to use the attacking "smash" stroke effectively.

A regulation pickleball court is prepared with special scoring zone markings across the net in a "TARGET" area. These targets extend from each sideline three feet beyond the net to three feet behind the non volley

zone line. Score values are assigned to each of the respective rectangles according to the difficulty of attainment (see fig. 4). A starting foot placement mark is indicated at the midpoint of the two receiving courts dividing line. The subject anchors his/her dominant foot on this mark and tosses the ball overhead at their preferred height. The subject then attempts to smash a shot downward into the opponents court into the designated numbered scoring zones. Ten trails are attempted, with the score of each shot equalling the point value of the zone on which the ball lands. Any ball landing on the line, scores the point value of the higher target area. The sum of the scores of all the shots is tabulated, and the average score is recorded.

7. AGILITY TEST: This test is designed to determine the speed, acceleration, quickness, and agility of individual students.

A simple rectangular course is constructed along the lane lines by placing a cone at the intersections of these lane lines with the free throw line and the baseline. Another cone is placed in the exact center of the free throw lane equidistant between the cones. The student is instructed to run a figure eight pattern around the cones, and to return to the starting point. A simple split second stop watch is used to record the time. The watch is started upon first movement by the performer, and the time ends when the performer's foot hits the finish (starting) line at the completion of one circuit. Two trials are allowed for each performer, and the best score is tabulated, recorded, and each participant's score is ranked.

SCORING:

Local norms can be established, records kept, and various class competitions arranged. EWU pickleball norms and standards have been established and are available upon request. The skill test has been well received and seems to be an adequate measure of student performance.

CONCLUSIONS:

It must be reiterated that this "Pickleball skill test" is among the first published in this sports skill area. Future research might focus on a general secondary school population, rather than on the collegial "gifted subjects" model chosen. Obviously, the scoring norms developed and used in this test are, and should be, higher than those found in a general population. Perhaps, even though the validity and reliability coefficients were comparatively high, a larger group could also be studied. The test seems relatively straightforward and easy to administer, and should provide a definitive means of evaluating and grading student's skill levels in the physical education activity of pickleball.

Fig. 1.0 Service Test

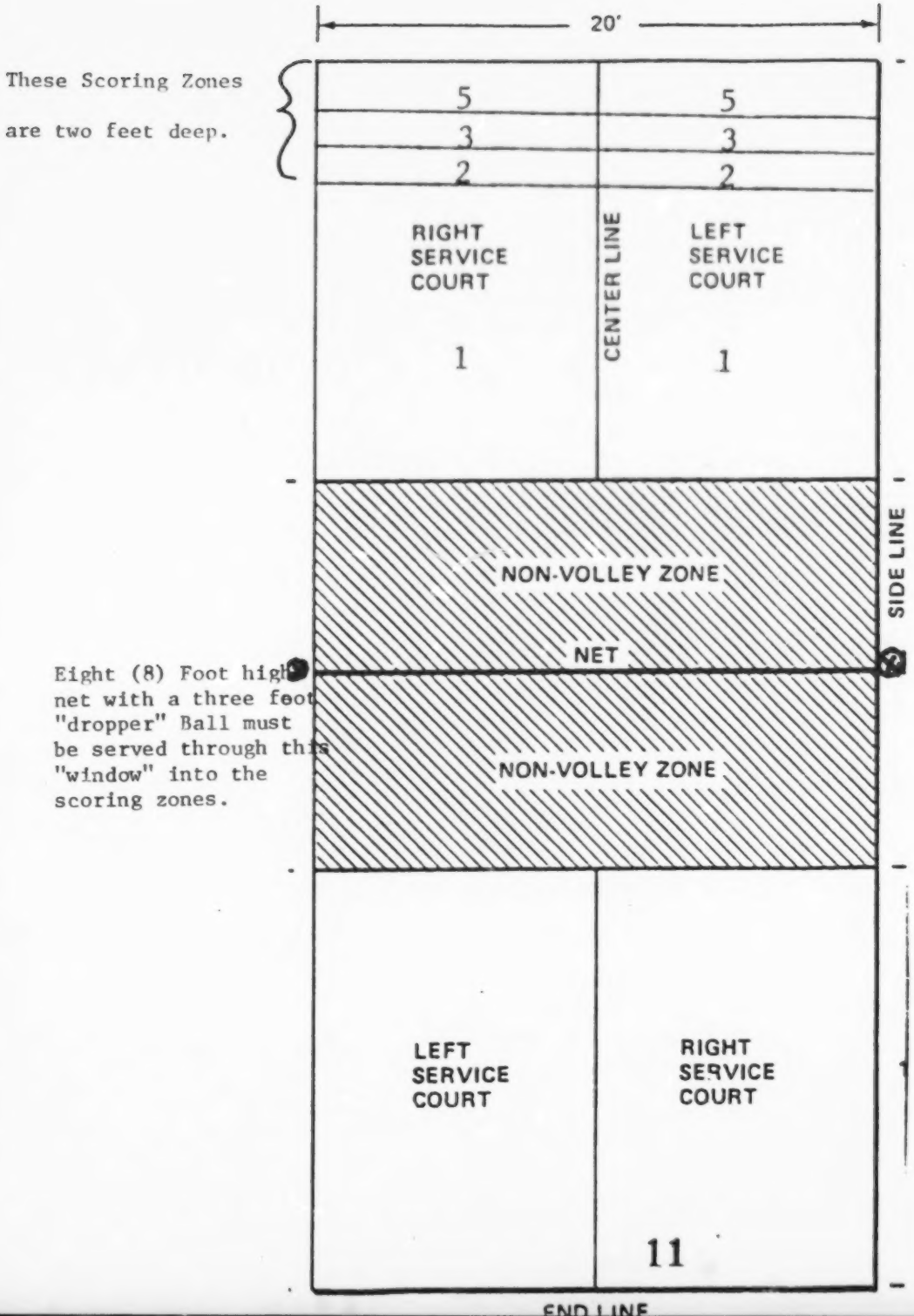


Fig. 2.0 HIGH LOB OR CLEAR TEST

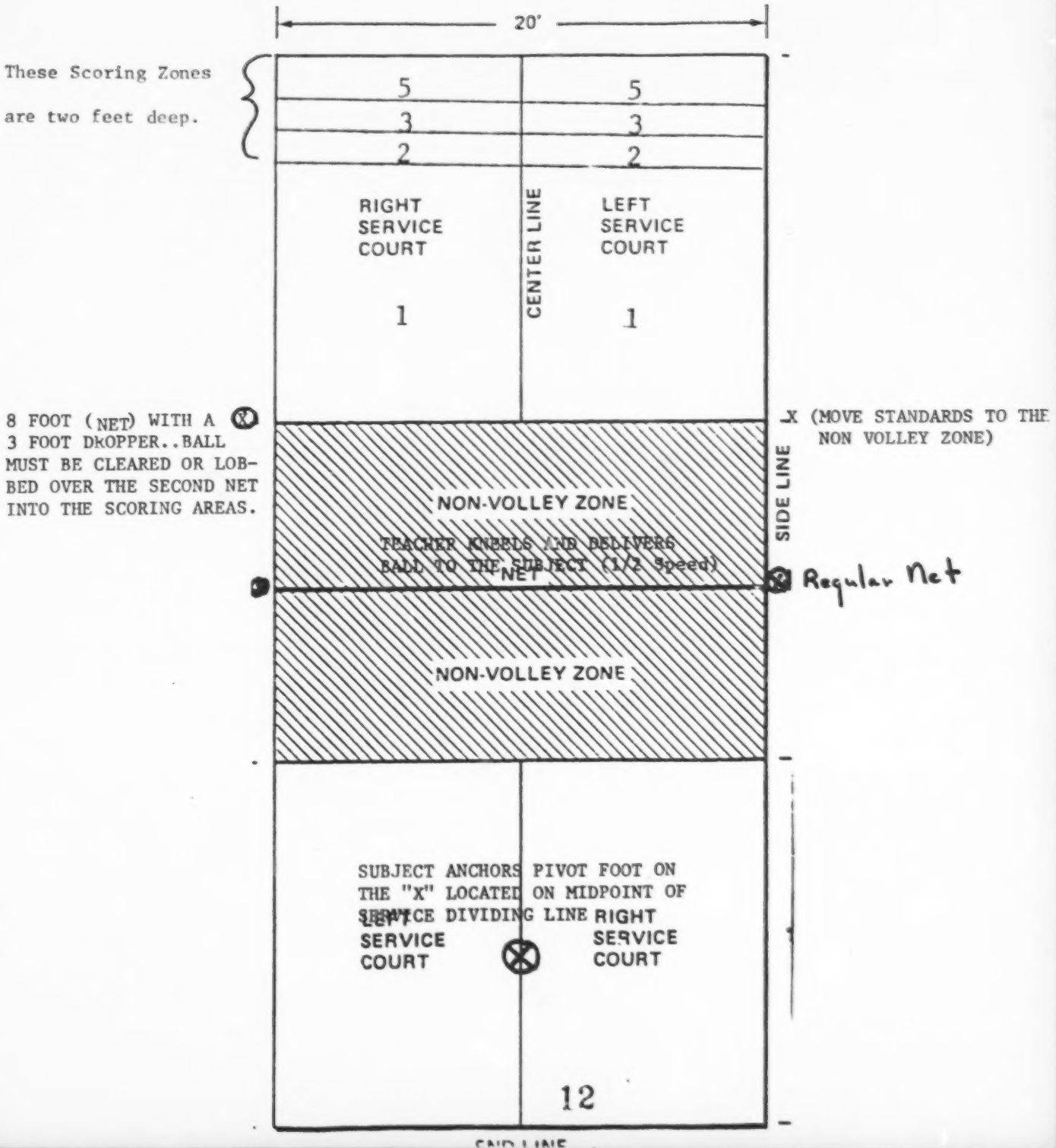


Fig. 3.0 "DRIVE" TEST

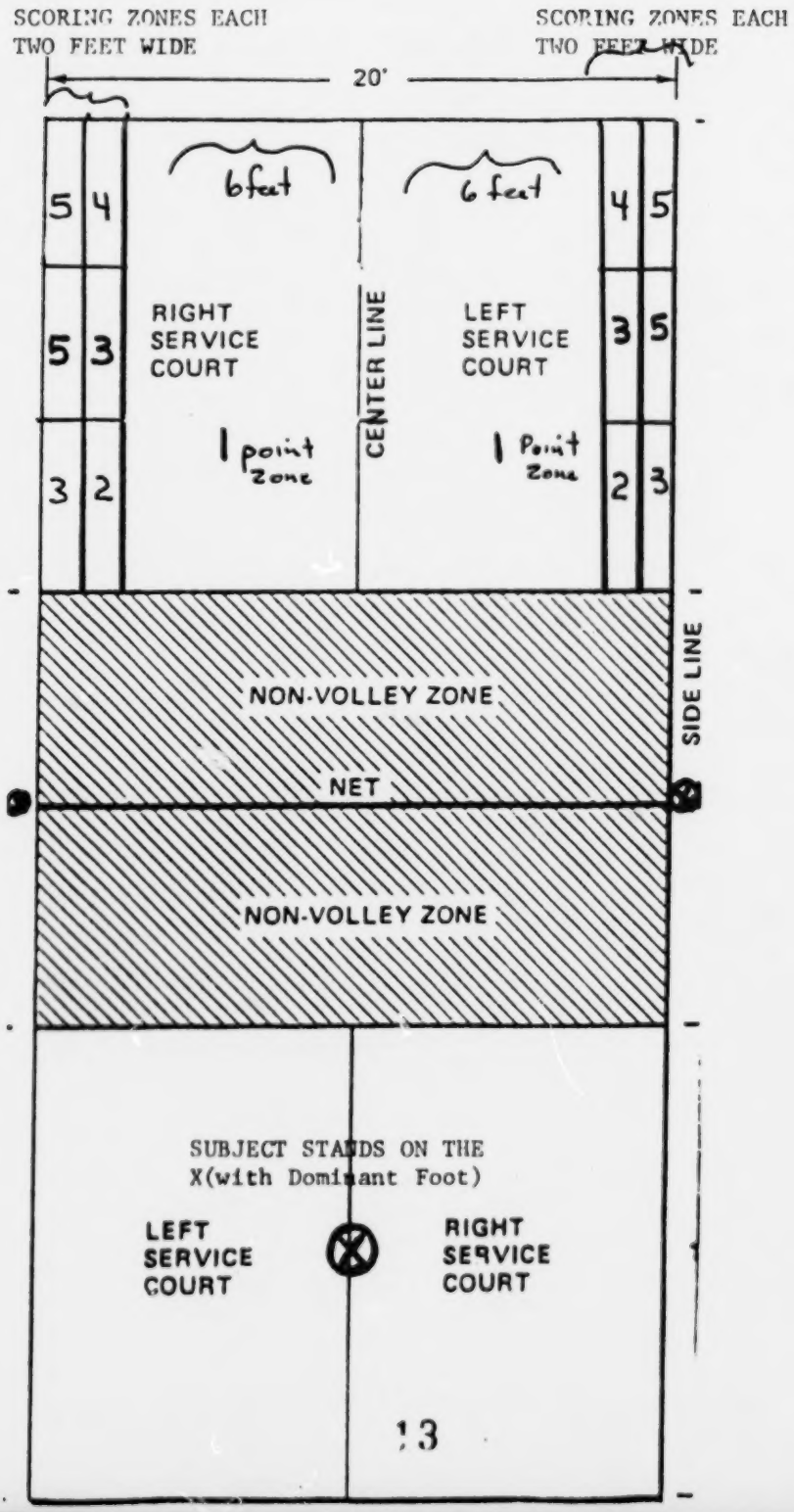


Figure # 4.0 "SMASH", OR "KILL" TEST

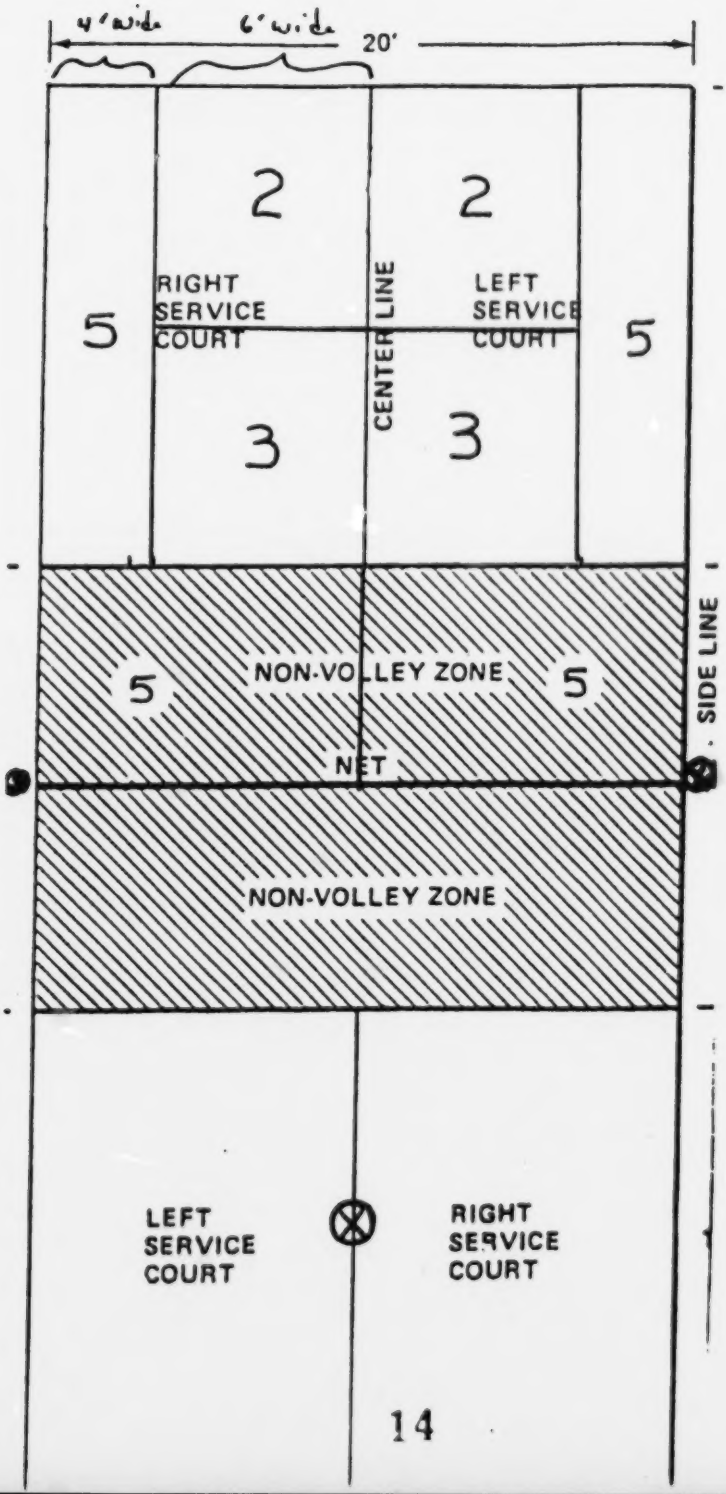
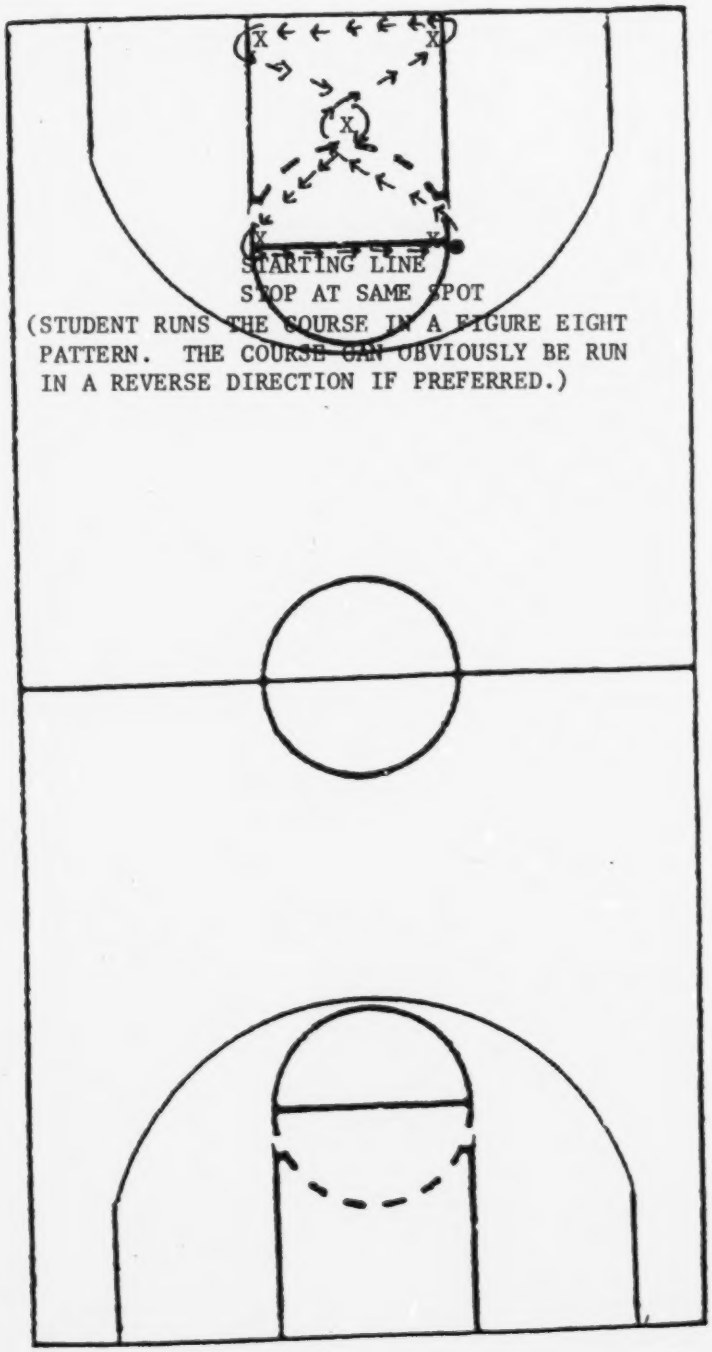


Fig. 5.0 Agility Run Test


STARTING LINE
STOP AT SAME SPOT
(STUDENT RUNS THE COURSE IN A FIGURE EIGHT PATTERN. THE COURSE CAN OBVIOUSLY BE RUN IN A REVERSE DIRECTION IF PREFERRED.)